

# **Franklin County Board of Health**

## **Integrated Mosquito Management Plan**

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**Submitted by the Franklin County Board of Health**  
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## Introduction

Ohio local health districts have a statutory responsibility to protect those within their health district from infectious diseases, including West Nile Virus, Lacrosse Encephalitis, St. Louis Encephalitis, and other vector-borne diseases. This includes the responsibility to manage the mosquito population to reduce health risks to residents of the county.

To meet this responsibility, FCBH has designed an integrated approach to effectively and economically reduce nuisance and human health risks from disease carrying mosquitoes.

## Purpose

The purpose of this integrated mosquito control plan is to protect the health, safety, and welfare of the citizens within Franklin County. This plan is designed to present a balanced approach to mosquito management which considers the human health and environmental risks associated with mosquito management activities compared to quality of life issues and human health risks from vector borne diseases in the mosquito population.

## Program Goals

The goals of the mosquito control program are to reduce the risk of vector borne disease transmission from mosquitoes and to protect the health of Franklin County citizens. These goals will be attained through an integrated approach to mosquito control and management.

### Program Priorities

As a publicly funded program, it is important to prioritize the mosquito control efforts to have the best chance of meeting the program goals in an efficient manner. Program activities will be prioritized according to the following guidelines:

1. **Reduce the risk of disease transmission** by focusing mosquito control activities in areas with high incidences of disease positive mosquitoes.
2. **Break the disease cycle** by targeting areas with high populations of known vector species.
3. **Address future risks** by monitoring areas with high populations of potential vector species.

## Program Components

- Public Education -- *Giving residents what they need to know to protect themselves and reduce mosquito populations.*
- Surveillance -- *Collecting information about mosquito habitat and populations of mosquitoes to direct management activities*
- Source Reduction – *Identifying and eliminating juvenile mosquito habitat*
- Larval Mosquito Control -- *Applying chemical and biological agents to kill juvenile mosquitoes*
- Adult Mosquito Control -- *Applying chemicals to suppress adult mosquito populations*
- Biological Control -- *Encouraging habitat for species that prey upon or compete with juvenile and adult mosquitoes.*

## **Methods**

An integrated approach to mosquito management uses knowledge of the life cycle and biology of the target mosquito species. The management tools include the balanced management of human activities, the environment, and chemical controls that are environmentally compatible and economically feasible to reduce pest and disease vector populations to an acceptable level.

### Public Education

Franklin County Board of Health's campaign, "Take Mosquito Control Personally," will be initiated in the spring of the year. The plan will include information about how each community can eliminate mosquito breeding sites and reduce their risk of contracting a disease from mosquitoes.

The Public Information Officer (PIO) of the FCBH will coordinate public education with the assistance of the PIO in each community. The FCBH mosquito control personnel will assist with distributing this public information and respond to questions asked by public officials and residents. FCBH personnel will also be available to attend community meetings.

The public outreach efforts will include:

- Information about mosquitoes and mosquito borne diseases.
- Information about personal protection measures which may help reduce biting incidents
- Information on prevention methods that can be undertaken in citizens' backyards to reduce or eliminate mosquito habitat.
- Information on reporting dead birds and proper disposal.
- Requests for help from citizens to assist in the identification and elimination of breeding sites.

In addition, the following information will be provided to the designated contact in each community:

- Advisories regarding current surveillance information.
- Advisories and public notification prior to the initiation of disease vector control.
- Advisories on how to initiate personal protection of citizens, children and pets if disease vector spraying is used for control.
- Information on the chemicals and biological products used for mosquito control.

Information will be provided to local communities for distribution. FCBH will also make use of local newspapers and other media to disseminate educational information to the public. FCBH will maintain a portion of its website for mosquito control program information and general information about mosquitoes and disease. The FCBH mosquito hotline will be available for community members to log complaints about mosquito breeding sites and make inquiries about the program. There will also be a web-based reporting program for dead bird sightings.

## Surveillance

A good surveillance program is essential to provide information for program management activities. FCBH will be conducting three types of surveillance: source identification, adult mosquito trapping, and dead bird tracking.

### *Source Surveillance*

The safest and most cost-effective method to control mosquitoes is to identify breeding sites and eliminate them when possible. FCBH personnel will scout areas to identify potential juvenile mosquito habitat. This information will be coordinated in a GIS database to facilitate management.

Citizens will be asked to call the FCBH and report areas that they believe are harboring and breeding mosquitoes. Breeding sites, naturally or artificially created, hold water continuously for a period of three days or longer. Each mosquito species has a preference for specific types of locations. For example, *Culex* species will breed in catch basins and other manmade containers. Each species can play a role in disease transmission and therefore all breeding sites should be controlled using the best methods available.

Source surveillance is an ongoing process. In cases where WNV positive pools of mosquitoes are identified in nearby traps, more effort will be spent on source surveillance.

### *Adult Mosquito Trapping*

Adult mosquito surveillance will be performed from May through September using a variety of trap types to best sample nuisance mosquito populations and populations of species known to transmit WNV. The surveillance program is structured to provide sufficient information in a timely manner to implement appropriate control activities.

Trapping sites will be chosen to provide the best information for program management. Trap placement will be on public and private property. The locations of these traps will not be publicized. Adult traps are set in the evening and pulled the following morning. Trap contents are delivered to ODH Vector Borne labs for testing, with results compiled and distributed to the community contacts on a regular basis.

### *Dead Bird Surveillance*

Surveillance of dead birds has been a very useful indicator of the spread of West Nile Virus across the nation. West Nile Virus has now been identified in 46 states. The Ohio Department of Health (ODH) has made changes to the bird surveillance program at the state level that will be reflected in the FCBH program. FCBH will track dead birds through a web-based reporting form. Some of those birds may be collected for submittal to the Ohio Department of Agriculture for testing. As the virus is currently present in the county, FCBH is more interested in identifying and controlling populations of mosquitoes that are carrying the disease. FCBH is responding to this by increasing the focus on other aspects of the mosquito control program.

### Source Reduction

Source reduction is the most effective and permanent method of controlling nuisance mosquitoes and reducing the numbers of potentially disease causing mosquitoes. The information collected from the source surveillance efforts will be used to coordinate with landowners to eliminate juvenile mosquito habitat where possible.

Landowners with sites identified as candidates for elimination will be contacted and provided information about source reduction and contacts with other agencies where appropriate. Sites where elimination of the habitat is not an option will be evaluated for treatment and placed on a continuing monitoring program.

### Larval Mosquito Control

When a site has been identified as source habitat but cannot be eliminated, larval mosquito control will be performed where possible. Trained and certified FCBH personnel will apply appropriate pesticides to eliminate mosquito larvae. On private land, a mosquito control release form will be obtained prior to treatment. The site

will be monitored periodically for mosquito presence and appropriate control measures will be used when needed.

### Adult Mosquito Control

Adult mosquito control is the least effective and most costly method of mosquito management. It is to be used only when other control measures are insufficient to control the mosquito population, or when a significant percentage of adult mosquitoes sampled are identified as WNV positive.

Adult mosquito control consists of the application of an ultra-low volume fog delivered by truck mounted equipment. Application is conducted in the late evening and early morning.

Adult mosquito control will only be conducted in response to adult trap data or in response to public health considerations. The decision to fog an area will be based on the program priorities listed in the goals section. Mosquito populations fluctuate naturally throughout the season. Field data indicating a significant and inordinate increase in population of mosquitoes in one area, or a high percentage of disease positive mosquitoes in one area, will trigger an increase in surveillance and larval control and a review of adulticiding options.

To be effective, the treatment must be conducted within a few days of collection of trap data indicating a need for treatment. Public notice will be provided 48 hours prior to fogging. Residents with special concerns who wish to be excluded from the fogging must contact FCBH to be placed on the Do Not Spray list each year (Apiaries listed the prior year will be contacted in spring to verify they wish to continue on the list). FCBH will also maintain a Call Before Fogging list for residents who wish to have additional notice of fogging activity in their community. In any case, the person must provide complete information to FCBH to be listed, and Call Before Fogging listed residents must provide a daytime phone number.

### Biological Control

FCBH will encourage the use of biological control in mosquito management as much as possible. Biological controls include any organism that preys upon mosquitoes or competes with them for habitat. Examples of these organisms include surface feeding fish, bats, and crepuscular birds.

Biological control methods include the direct introduction of these species and management of habitat to encourage use by these species. Much of this activity is beyond the capacity of FCBH. Residents wishing to stock fish or create habitat for birds or bats will be referred to other agencies that can provide technical assistance.

## **Coordinated Programs**

Communities with their own staff and equipment for mosquito control are encouraged to coordinate their efforts with FCBH. FCBH will provide adult mosquito surveillance information and program direction for management activity. The community will gain the benefits of a research-based, integrated management program while providing their residents with a high level of service.

FCBH can provide identification of areas to be targeted for increased larval surveillance, adulticiding routes based on adult surveillance data, and program tracking and evaluation in reciprocation for local implementation of this plan.

It is of critical importance that any community that is receiving mosquito control services or is coordinating with FCBH not undertake any additional control measures. This plan is structured to provide research-based mosquito management. Additional control activities are not compatible with this plan.

Unplanned activity will disrupt the surveillance program and could increase the risk of disease to residents in adjacent areas. Communities engaging in unplanned activities will be assumed to have established their own mosquito control program.

If a particular community has established their own mosquito control efforts, the FCBH's primary functions in that community will be public education and guidance in regard to that community's program. Questions or complaints regarding mosquito activity in the community will be referred to the community contact person.

## **Research**

According to the American Mosquito Control Association, "the research element of the program has to keep pace with the operational element. There will always be a need or a desire to know more about the dynamics of the mosquito species and conditions in the control zone." More information of higher quality will allow the mosquito control program to be more efficient and effective in future years.

Building on information collected during the 2003 season, FCBH is planning a pilot program to test new trapping technologies and methods to increase trap efficiency. This information will allow for a much more detailed and accurate look at the mosquito population for the county. It will also allow for more accurate epidemiological risk assessment.

## **Special Concerns**

### Disease Outbreak

The activities under this program are structured to reduce the chance of disease outbreak in the human population. The primary goal of this program is to prevent such an occurrence. Despite our efforts, there is always a possibility that a human

outbreak of WNV or other mosquito-borne disease could occur. In the event of a critically high infection rate in the mosquito population, or several human cases of WNV, FCBH will coordinate with the Ohio Department of Health to respond in an appropriate manner as prescribed in the State WNV plan. This response may include issuing public health warnings, increased larval and adult control, or pesticides applied from aircraft. Every effort will be made to inform and coordinate activities with the local communities.

## **Evaluation**

A successful integrated mosquito management plan is one that is accepted by the community and reaches the goals of reducing the risk of vector borne disease transmission from mosquitoes and improves the quality of life for Franklin County residents through nuisance mosquito management. The plan will keep pace with planned objectives and be flexible enough to withstand unexpected changes and seasonal variation

A quality program will remain as a “work in progress,” because program directors and participants will continue to learn by experience. A formal evaluation will occur during the off-season by the Franklin County Board of Health mosquito program staff. Public forums or community input may be used for evaluation purposes. Evaluation results will be used to modify the plan for future seasons.

## **Future of the Program**

The FCBH mosquito management program has been developing and adapting to the needs of the community, and will continue to do so. FCBH will continue to apply and refine the science behind the management program to be responsive to disease issues. In the future, FCBH hopes to develop a coordinated plan that will address mosquito management in a cost efficient and effective manner countywide.

## **Conclusion**

This mosquito control plan is designed to promote and protect human health and the environment. It represents a departure from past practices of spraying on demand for nuisance mosquitoes. The focus of this plan is to collect and use the best information possible to make effective mosquito management decisions, and inform and motivate the public to become involved in mosquito control.

The plan takes a proactive approach to mosquito management, working to identify trends in the mosquito populations that will allow for appropriate management activity before a problem occurs. Implementation of this plan will improve the quality of life and help to protect residents from vector borne diseases, while reminding them to take mosquito control personally.

## APPENDIX A

### Surveillance and Program Activity Examples

Adult mosquito trapping sites are organized into clusters and located to sample productive mosquito habitats across the county. Adult traps will be set in each cluster weekly. Trap data will be compiled and analyzed to determine population trends for different areas in the county and relative numbers of West Nile Virus positive mosquitoes.

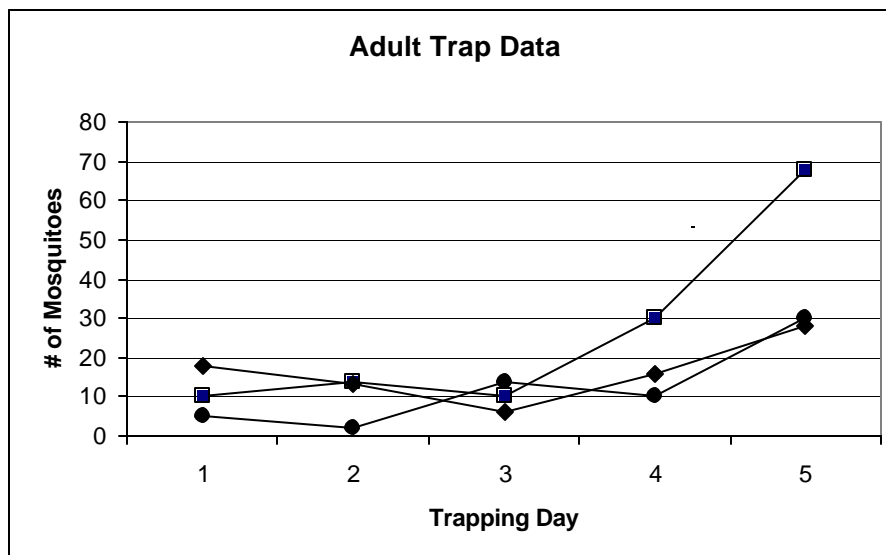
Management activities will focus on the program priorities:

1. **Reduce the risk of disease transmission** by focusing mosquito control activities in areas with high incidences of disease positive mosquitoes.
2. **Break the disease cycle** by targeting areas with high populations of known vector species.
3. **Address future risks** by monitoring and treating areas with high populations of potential vector species.

The best indicator of a high risk of transmission of WNV to humans is the percentage of adult mosquitoes that are infected. In these situations, a small number of WNV positive mosquitoes can be a large percentage of the population, if that population is also small. When there is a high percentage of infected mosquitoes, the program will increase surveillance, source control, and larval control in the area. If the percentage of infected mosquitoes is not reduced, adulticiding will be used to disrupt disease transmission.

When a population in one area shows signs of growth beyond normal seasonal variation, the program will increase surveillance, source control, and larval control in the area. If the population does not respond to these measures, adulticiding may be used to temporarily control the population.

Example:



The data analysis looks for clusters that show unusually high population growth rates. The trend identified by the circle in the graph would trigger an increase in surveillance, source reduction, and larval control. If the population did not respond to that treatment (the line continues to go up) fogging would be considered to control the adult population.